



Pacific Bird Observer

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A MILLION SOOTY TERNS

The Sooty Tern is the most abundant bird in the tropical Pacific Ocean. From islands off the coast of Mexico across the Pacific to the Philippines it is known to breed, or has at one time bred, on most island groups in the tropical Pacific. It reaches its greatest abundance in the central Pacific where individual colonies sometimes contain more than a million birds. Fishermen rely on large flocks of Sooty Terns to tell them where their fish schools are. The eggs of this bird are gathered each year at many colonies for food.

In spite of the abundance and wide range of this bird, biologists are puzzled about many of its habits. For this reason, POBSP field workers have banded over a million Sooty Terns in the central Pacific. Among the questions the POBSP hopes to answer with these banded birds are these: Where do Sooty Terns go when they leave their island after breeding? Do birds from different islands spend their nonbreeding seasons in different places? Do the birds of one island stay together at sea

when they are not breeding, or do they mix freely with birds from other islands? How old are Sooty Terns when they first start to breed? How long do Sooty Terns live? Do Sooty Terns that are not old enough to breed follow different migration routes from breeding birds? These questions will not be answered overnight. They will require careful compilation of facts based upon all the bands that our collaborators recover throughout the Pacific Ocean.

What are the chances of recovering a banded Sooty Tern? In spite of the immense numbers banded, the total population is so high that the chances of any one Sooty Tern being banded are considerably lower than for other birds such as frigatebirds or boobies. However, a million banded birds are somewhere in the Pacific waiting to be recaptured.

Some Sooty Tern recaptures have already been reported, and we are very thankful to those who have contributed them. Many more will be needed before biologists can piece together the patterns of

movement of these birds.

The life cycle of the Sooty Tern has been the subject of intensive study in the central Pacific. The first evidence that breeding activity is about to take place is the presence at night of increasingly large numbers of Sooty Terns, swirling over the island in a loose spiral. A highly social species like the Sooty Tern requires the proper social stimulus in order to commence breeding, and in this case the social stimulus is provided mainly by the dense swirls of birds near and over their intended breeding island.

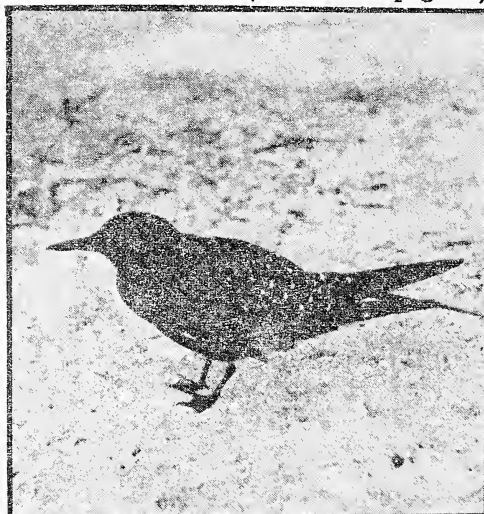
At last, when all conditions appear to be right, the first birds touch down for a short time during the night. We can only speculate on what the "proper" conditions are. They probably include the assurance of a continued food supply at sea within a day's flying time from the island, enough bare ground available for nesting, and sufficient numbers of Sooty Terns swirling together to satisfy the social stimulus requirements of the colony.

Gradually the numbers of birds touching down increases from night to night and the length of time they spend on the ground increases too. Finally, some stay through the day as well, and immediately thereafter eggs are laid. The parents take turns incubating their egg which they cover with their breast on a simple, shallow dish-shaped scrape in the sand. They are surrounded by other Sooty Terns, all incubating their eggs. Their nearest neighbors are usually only a foot away. In many colonies the available nesting space is utilized on three levels. Frigatebirds and boobies roost in the bushes, Sooty Terns on the ground, and shearwaters and petrels occupy burrows under the ground.

Sooty Terns incubate their egg for about 28 days and about two months after the young have hatched they are ready to fly. During these two months the parents feed the chicks daily, and frequently several times daily, on small fish and squid caught in the ocean nearby.

About five months after the first eggs are laid the adult Sooty Terns and their newly-fledged young head out to sea, leaving behind their breeding island. The adults will return sometime in the next year to breed again. The young birds remain at sea for two years, but may pay their first call to the breeding island in the second year, although they do not attempt to breed until sometime after their fourth year. By the second year the dark gray plumage with white speckling on the back of immature birds has been replaced by the black upperparts and white underparts of adult birds.

(Cont'd on page 4)



Immature Sooty Tern
Photo by Philip C. Shelton

SOOTY TERN BAND REPORTERS

NAME OF REPORTER	BANDING LOCALITY	RECOVERY LOCALITY
Messrs. Genaro Maturan and Dominador Araquei	Howland Island	Manaya San Roque, Macroban, Southern Leyte, P. I.
Francisco Barconal	Howland Island	Baao, Camarines Sur, P. I.
Miss Sally Lim	McKean Island	Borongan, Samar, P. I.
Carlos Pomarejos	McKean Island	Can-ilay, Can-avid, Eastern Samar, P. I.
Domingo Noche	Christmas Island	Lutopan, Toledo City, P. I.
Florentino Mallen	Johnston Atoll	Off Cebu I., P. I.
Jesus H. Arcinas	Johnston Atoll	San Pablo City, P. I.
Macario de los Santos	Johnston Atoll	Ligao, Albay, Albay, P. I.
Isidro Ravina	Midway Atoll	Sampaloc, Quezon, P. I.
Antonio M. Sison	Midway Atoll	San Miguel, Tarlac, Tarlac, P. I.
Rosalinda Mamauag	Midway Atoll	Rizal, Cagayan, Northern Luzon, P. I.
Paul Lemar	Laysan Island	Ebjedik I., Marshall Islands



Adult Sooty Tern with egg.
POBSP Staff photo

Nobody knows how long a Sooty Tern can live, although banding studies have shown that individual birds have lived to the age of 28, and some may live longer than that.

Sooty Terns are strong fliers. They seldom land on the water, nor do they come down to rest on islands other than their breeding island. Their feathers do not remain waterproof for very long when they are placed on the water, and their feet are smaller than those of other kinds of terns that sit on the water frequently. Biologists are forced to conclude that Sooty Terns are capable of continuous flight for any length of time, a most remarkable conclusion.

The questions concerning the life of the Sooty Tern away from its breeding grounds can only be answered by the recapture of banded birds. To aid in finding the million banded Sooty Terns, many thousands of them have colored plastic streamers attached to their legs. If one Sooty Tern can be

caught in a net, that bird can be used to attract others close enough to be caught by tying it by a long string and letting it fly about. Sooty Terns in a weakened state or dead should be looked for along the shoreline following severe storms. This is probably the best time to find banded birds. We would like to ask our collaborators across the Pacific to watch for these banded and streamered birds and to report them to the U.S. Fish and Wildlife Service, or to the nearest local authority, so that we can share with you the mysteries of the life of the tropical Pacific's most abundant seabird.

-Warren B. King

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 birds and their relation to
 man in the Pacific.
 Letters to us concerning
 our program in the Pacific, re-
 quests to be put on our free
 mailing list for the Pacific
Bird Observer, and contri-
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THE BROWN BOOBY

The adult Brown Booby is about thirty inches long, with dark brown upperparts and a white belly which is in sharp contrast to a brown breast. In the Central Pacific, Brown Boobies of both sexes have completely brown heads, while in the Eastern Pacific males have either white or gray heads. The plumage of the young birds is brown, but the belly is slightly lighter than the upperparts. Within two years these young birds will attain the brown and white adult pattern.

Male adult Brown Boobies can be distinguished from females by their calls and bill coloration. The male's call is a high-pitched whistle, while the female's call is a loud honk. Males have a dark area around the base of the bill which turns blue during the nesting season; the female's bill is bright yellow at the base with a dark spot in front of the eye.

Brown Boobies are found on many uninhabited islands across the entire Pacific. Although this species numbers in the thousands, only a few islands support populations greater than a hundred birds.

The reasons for their relatively small numbers, compared with the closely related Red-footed and Blue-faced Boobies, are unknown. One difference between Brown Boobies and the other two species that could relate to this problem is the wary nature of the Brown Boobies. While Red-foots and Blue-faces allow people to approach their nests before they take flight, Brown Boobies generally fly off

long before observers reach the nest. It is interesting to note, however, that when birds of this species have continuous contact with man, they become quite fearless. In fact, on several occasions POBSP field personnel have been attacked by adult Brown Boobies when they wandered too close to nests.

Like many Central Pacific seabirds, the bulk of the Brown Booby's diet is flying fish. It also eats squid and various reef fish, such as blennies.

To catch their food Brown Boobies dive into the water, sometimes from heights of fifty feet or more. Occasionally they catch flying fish from behind in mid-air.

The presence of reef fish in the diet of this species suggests



Adult male Brown Booby with chick.
Photo by Philip C. Shelton

BROWN BOOBY BAND REPORTERS

<u>NAME OF REPORTER</u>	<u>RECOVERY LOCALITY</u>	<u>BANDING LOCALITY</u>
G. Sapoia Nitz	Funafuti Island Ellice Islands	Kure Atoll
H. B. Laji	Majuro Atoll Marshall Islands	Kure Atoll
Mehemiah Fritz (via K. D. Emiv)	Nauru Island Pacific Ocean	Johnston Atoll
G. Sapoia Nitz	Funafuti Island Ellice Islands	Pearl and Hermes Reef
Alfred W. Capelle	Likiep Atoll Marshall Islands	Bikar Atoll
P. Dunbar	Funafuti Island Ellice Islands	Birnie Island
Brian D. Campbell	Trench Island T.P.N.G.	Birnie Island
P. S. Jackson	Funafuti Island Ellice Islands	Enderbury Island
P. S. Jackson	Nukufetau Island Ellice Islands	Jarvis Island

(Cont'd from page 5)

that another feeding method must also be used. Evidently the birds stand on reefs and catch fish from tidal pools in the rocks.

In some areas Brown Boobies, especially young ones, accompany ships and feed on fish that are flushed from the water. This procedure has its problems, however. Some birds finish a dive to find a ship less than five feet away and

only by taking flight immediately can they avoid being run down.

Brown Boobies nest on the ground in habitats ranging from Pisonia forests to open rock ledges. The only requirements for nesting seem to be an open area and the presence of nesting material. The nest is a large structure of twigs, leaves, and stems. Generally two white eggs are laid. However, as

PROJECT SEEKS HELP FROM PACIFIC RESIDENTS

many as four eggs have been recorded in one nest. Both of the eggs may hatch, but only one of the nestlings usually lives longer than a week. Both adults guard and feed the nestling.

When the nestling is small, feeding is a relatively simple affair. The adults arrive with the food, the chick calls, pecks at the adult's bill, and is then fed. As the chick develops, its begging for food becomes more active. It calls, arches its neck backwards, flaps its wings, and pecks at the adult's bill more vigorously.

After three months young Brown Boobies begin to fly. For some time afterward they return to the nest site to be fed but eventually they are "on their own."

During the first two or more years of their lives many of them wander widely, sometimes 1000 miles from the island where they were raised. Throughout this period they develop the skills necessary to become proficient fishermen

-Paul W. Woodward

Interested persons living in the Pacific are urged to assist our study of Pacific birds by sending us your personal observations. Although we have scientists stationed in the Pacific, there are many islands, some of which are substantially populated, that are not covered by their studies. Observations made by interested laymen are often just as useful as those made by scientists and will help fill these gaps.

Your letters giving information such as the local breeding and migration schedules for various species, approximate numbers of a migratory species there at any one time, etc., would be especially appreciated. Also useful are interesting photographs from your area, particularly if of a bird which is not commonly found there.

We look forward to publishing appropriate contributions in future issues.
Editor



Although they nearly always lay two eggs, Brown Boobies rarely rear both young. These two three-month-old chicks, shown with the female, fledged from a nest on Johnston Atoll in 1966.
-Photo by Philip C. Shelton

